National Institute of Environmental Health Sciences

Approaches for estimating effects of climate change on heat-related deaths: Challenges and opportunities

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Abstract:

The distribution of overall temperature and the frequency of heat waves maybe shifting due to climate change. However, forecasting future health consequences of higher temperatures in a given city is complicated by uncertainties in how populations and societal infrastructure will adapt. This paper reviews approaches to address these challenges, including: (1) using historical weather-mortality relationships for the same region, or a location with a similar climate as the city of interest; (2) evaluating adaptation using the minimum mortality threshold (MMT) temperature (i.e., the temperature with the lowest mortality rate); and (3) estimating the impact of modifiers (e.g., air conditioning, population density, green space) on the temperature and mortality relation, and then predicting a range of effects based on plausible estimates for the future values of these parameters in a given city. Each approach can provide insight into how heat could affect mortality under a changing climate, but all have uncertainties. In spite of these limitations, projecting the future public health burden of temperature-related health effects can provide valuable information to aid public health and environmental authorities in planning and communicating the risks of climate change to the public.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified, Urban

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Injury, Other Health Impact

Other Health Impact: heat related mortality

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Methodology

Resource Type: ☑

format or standard characteristic of resource

Research Article, Review

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content